

**Therese Cirone  
RSR Corporation**

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I'm with RSR corporation, and we are in the secondary lead recycling business. Our primary business is the reclamation of lead acid batteries, we are responsible for operating three secondary lead acid reclamation facilities in three states, California, Indiana, and New York State, and our primary products are lead, plastic, and sodium sulfate. Sodium sulfate is made from our facility in New York because their wastewater treatment facility, the publicly owned treatment works cannot handle the high amount of solids that normally come from the neutralization of battery acid in your wastewater treatment systems, and so we had to put in a piece of equipment, and we were able to recycle that salt and make sodium sulfate, which we sell again into the chemical arena. We receive our batteries, or we call them scrap batteries, some people call them junks, some people call them SLABs, but they're scrap batteries to us. We receive them from our customers, the battery manufacturers, and we receive them from scrap dealers, and we go out and buy those ~~spend~~ **spent** lead acid batteries.

I'm in the environmental profession and my job is primarily environmental compliance for my company, so I won't speak to commercial terms. I've heard the conversion used when I've been at work, but primarily, we sell a lot of lead back to the folks we get our spent lead acid batteries from, and that would be the battery manufacturers. It's a very complicated process, but it can also be a very simple process. It depends on how you look at it. We get batteries sent to us in trucks, sometimes in rail cars, but primarily in trucks, transit, and they come to us shipped in, wrapped in numerous plastic **visqueen** ~~bisquines[sp?]~~ and forms, we then send it through our processing, and here (on slide) is actually one of our facilities is the inspection belt, the batteries will come in, we'll bring them on to dump them into a hopper, they go to the inspection belt, and then go to the breaker.

Now everybody keeps talking about this material as hazardous waste as it is, but for the operations folks out there, this would be feedstock, and at this point, there are a different set of regulations that kick in, but we'll speak primarily to the handling, the collection and storage, and again, if you watch me up here, David Weinberg went through the U.S. regulations rather quickly, but again, as a member of the regulated community, it's really important for us to sift through the rules and try to make sense of that and work it into procedures that your folks at the plant can work with, and you can stay in compliance with those rules and regulations. And then, after we perform our magic in the plants, we get lead, and it goes back to the battery manufacturers. It's pretty much the cycle. The battery reclamation process, this is a block diagram (on slide), and we've added in the sodium sulfate section, but we did it color coded, the gray areas are primarily the discharges, the batteries coming into the battery wrecker, which is a piece of process

equipment, we'll have the metal going to the furnace, there are two furnaces, we call them reverb furnace and electric-~~arc~~ **arc** furnace, one of them handles the wrecker material directly, and the other will handle the slag from that furnace, and then that metal will go into a refinery, and you'll make a product. ~~The~~, **Also**, acid from the wrecker will go to acid treatment, and then it'll go to wastewater treatment where it's discharged, and we also have slag that is disposed of.

My background is primarily chemical industry, I've only been with the battery, lead industry for five years, and quite frankly, I have to tell you, this doesn't look a whole lot different than any other process that I've worked within, because you have a feedstock coming in, you have air pollution control, you have wastewater control, and you have solid waste control. The difference is, when your feedstock, or your batteries, come on site to a secondary lead smelter.

U.S. regulatory background. Quite frankly, if you generate lead acid batteries, and you're going to send them off to reclamation, that is, you operate a facility where you have your own maintenance on your equipment, on your mobile equipment, and you store, you have batteries that you're going to send off site, the rules, really, for hazardous waste generation don't apply. You're exempt. If you are a collector for reclamation, but you're not doing the reclamation on site, the rules don't apply. If you're a reclaimer of those batteries, but you don't store them on site, the rules don't apply. However, if you reclaim batteries, and you store them on site, well you're a secondary lead smelter, chances are, but you're also regulated, and there is the biggest difference in the U.S. scheme.

So what does this mean? And everybody's talked about it. It means you're going to have a part B permit, it means you're going to be treated as a treatment, storage, or disposal facility in the United States, and in each individual state, there's no changes there, and you're going to require a permit, a part B permit. Every part B permit I have is at least two binders thick, and it includes procedures, and procedures on how you're going to be handling your batteries from the collection and storage on site. There'll be operating requirements for your storage area, secondary containment requirements, there'll be procedures for and requirements for inspecting those loads, and I really took this language out, I went through and looked at all three of our facilities and looked at their part B permit requirements, and I basically have pulled this out of our operating permits. You'll have requirements for inspecting those loads, as I said, for unloading them into storage, for ~~dressing~~ **addressing** broken batteries and spills, for handling non-conforming waste, that is, waste that somebody decided **to send and** that got in, a battery that's not a ~~slab~~ **SLAB**, non lead material, things of that nature, procedures for inspecting those batteries once they're on site and in your container storage area, and also that you document those inspections.

I don't want to speak too much to it except to mention it's a thing called financial assurance. When David talked about ~~circular~~ **Federal** requirements, one of the ~~wrecker~~ **RCRA** requirements, one of the requirements that you must have as a TSD facility as a part B facility, is that you have enough insurance or financial assurance, depending on what state you're in, how it's handled, to be able to address cleanup of those hazardous

waste storage areas. If indeed, the company closes, goes out of business, and has to clean up the area, and that is something that I didn't add, that's very important, and it's a direct response to cleanup costs when plants have shut down and not been able to file for bankruptcy, or gone out of business and not been able to do that cleanup. This is, again, something that is specific to secondary lead smelters, because again, we're considered a TSD facility, so there is a financial insurance requirement.

In addition to all those things, we have rigorous oversight by regulatory agency. Again, that's handled pretty much by the states individually, and it does run the gamut, sometimes you'll see an inspector once a year, sometimes you'll see an inspector once a year, and they'll stay on site for two weeks, and sometimes you'll see an inspector once a month. I have all of those on site, so yes, we're looked at. We've raised our hand, and we are truly a member of the regulated community. We also have customer audits and due diligence, primarily because of the SREA that Dave spoke to. There's ~~four~~ numerous pages of legalese on what's considered due diligence and good responsible review of an operating and reclamation site, but quite frankly, there's very little guidance, and so again, when folks come in and do customer audits and due diligence, they run the gamut. It could be someone who comes in and just looks at your container storage area, someone who wants to look at some of your permits, and then some folks want to see everything, quite frankly, and that's a negotiation. In many cases it depends on how many batteries we get from them. There are also folks that will come in and do audits on behalf of customers, ~~q-meg (sp?)~~ CHWMEG is one such third party audit operation in the U.S. that will come in and do an inspection, and then sell that to their customers so that, every customer doesn't have to send in a consultant to do that audit. JUVAC is another entity that does audits for some utility operations on the west coast.

The key question that I ask generators, and that I tell folks that come up and say we want to do an audit of your facility, is are you sure that your batteries are coming to us? That's the key. There are 12-13 smelters in the United States, and there are folks, as you know, exporting batteries to places that don't necessarily have the same requirements, and I would recommend that, if you're concerned, there are lots of folks looking at the secondary lead smelters. I'm sure the gentleman from ISRI will talk a little bit about what to look for with your scrappers, but you need to find out where your batteries are going and get some assurance that they're going to the right folks.

I'd like to just share with you the process of bringing in batteries onto our property. It's a picture of one of our facilities (slide) and this is the scale, and the batteries will come in from offroad here and come on in and go onto the scale. Again, same operation, we have with the scale. I'm going to talk about these items right here and that we have at all of our locations. This is a radiation detector. We have one at all of our scale houses, and it will detect, in the top part of the truck, and it'll also detect at the lower level. We are an operation that handles lead. What does lead shield? Radiation, and sometimes folks want to get rid of radioactive material radiation,. They figure they can just kind of slide it by into the smelters with the lead, you'll never catch it. I don't know, and I can't speak to the exact sensitivity of this, but I understand that there's a gentleman who's had some surgery, and had radioactive tracers placed in him via cancer, and he sets the detector off

all the time. Also, so what happens is you have a fairly sensitive reading here, it goes back into the scale house, and you can tell whether or not you've got someone trying to get radiation through, we also have handheld Geiger counters that will come out and then go over it, and that's one of those procedures that we have to put in place, because that's a problem, and I'm sure other smelters have the same issue, and probably have the same methodology for addressing it, it's not really rocket science.

Batteries come to us in many shapes and forms and sizes. We like to get them on ~~palettes~~ **pallets**. We expect to get them on ~~palettes~~ **pallets** and wrapped in plastic, that protects a lot of things, it protects ~~you~~ **you** during transportation, it protects against spills, it protects a little bit against fire, but that's one of the requirements that we have. Again, another picture, **from a** different **facility**, just to get a sense of this, and we have a lot of these trucks coming in on a daily basis. Lightings not real good on that **picture**, but again, you get kind of the idea on how we like to get our batteries sent to us. I just put that in because we actually got a FedEx box with some batteries in it. I don't know what they were thinking, and I don't know why our truck driver took it, but he did, so based on that, you would think we'd have to have some pretty good inspection practices, which we do, again, right out of ~~the, really right out of~~ our permit **requirements**. This is ~~the requirements, or~~ basically is handled by the receiving team, the folks that not only track the amount of raw material for commercial purposes, but are also having to look at this from an environmental standpoint. We are looking for leakage, we're looking at labeling, we're looking at batteries, if they're in good shape or not in good shape. **In some cases** sampling may be required. Again, this is part of our, Part B permit **requirements**. **We are** talking about batteries, but we get factory scrap from the battery manufacturers, lead material grids or you know, paste, or some other things **too**. **In some cases with factory scrap** that will come in we have to take a sample. **This is done** ~~but just to make sure, if anything, just~~ for meeting the purposes of our part B permit, for **meeting** our waste analysis plan. This is common sense, but only if you have a common experience. You must handle batteries in a manner that prevents spilling of liquids, absolutely. I mean, again, that's why you want things on ~~palettes~~ **pallets**, so they're easy to manipulate and handle with your forklift. You clean up any spills that you find in the truck or on the ground, make sure that the banding is put in the correct disposal receptacle, and contaminated pallets should be washed before reuse or disposal. ~~Palette~~ **Pallet** management is difficult in every plant, I think. Again, depending on the quality of your pallets, can they be recycled, and also the availability of good, reputable, ~~palette~~ **pallet** reclaimers and reconditioners. That's an issue, because you go through a lot of ~~palettes~~ **pallets**, you need to clean them, and quite frankly, I know, that if I send my pallets off to a reconditioner or a reclamation operation, and any lead shows up on their property, I know who they're coming after. So we make sure we have practices and procedures in place, and sign off on that to make sure that the pallets going out are clean.

I just put this in from a safety standpoint. These are called "stop hogs", and they're really not big as hogs. At one of our plants however, they are. These trucks are being offloaded, and I don't know about you, but sometimes, when people put the key in the ignition of any vehicle, their brain has a freeze, and they pull out, and they're not quite ready, and so these are put in place to remind everybody, "Don't leave yet." You see,

they're bend a little bit, so I think it's a good idea. I think we've saved a forklift driver, I hope! But it's a good safety practice, and every now and then, the plants come back and say, "Can't we move those, Terry, it's kind of slowing the process down?" And my answer is no. All I have to do is look at the stop hog, the bent one, and say, "We're not changing it yet." All right, moving on to the storage of the material. You have batteries coming in, and we try and process the batteries as quickly as we can and when that doesn't happen the batteries have to go into a storage area, with the same requirements as a hazardous waste storage container area. They have to be ~~palettized~~, **palletized** and they have to be stacked up right, and you need to be capable of doing an inspection and spotting a leak. That's really the bottom line. You've got to look out for shifting potential, nothing worse than having a bunch of batteries fall on one of your operators doing an inspection, that's not a good thing. The drums must be closed and labeled, and they must be, again, be properly labeled. The batteries have to be labeled when they get into the battery storage area. We get a lot of batteries with universal waste labels on them, and we're not a universal waste handler, so we usually have to remove those batteries and put on a hazardous waste label.

And again, an example of the batteries with the label on them, every one. If they are shrink wrapped, we just put them right on the shrink wrap and have them cover all three. Let's say there are three batteries and they are shrink wrapped. We will put one label on there. In that case, that would work. Here, we have a barcode system that one of our facilities uses. Batteries left outside for any length of time, especially in the elements, you get some fading on the label and you need to know when that battery came in. Our barcode system there works pretty well in that we can go back and track the date that that load came on site.

Again, more examples, I told my compliance managers to go out and take pictures, and they had a good time. The container storage areas, and the battery storage areas, require labeling, I'm sorry, signage. We also have a security fence that goes around the entire facility. This is an example and I think it is a good example of aisle space. Again, I always tell the folks, I need to be able to walk through and not get hurt, but actually, you need to be able to get in there and spot a leaker and get it into a container. That's adequate aisle space, and I think that is a good example of it from our California facility.

This is another example, actually, this is the Indianapolis facility. The plant is located in a manner that it has a lot of water that comes on site. That trench used to be our secondary containment for the battery storage area, and you get a lot of rain that will come down and kind of flow into the trench. This ruins your capacity to be able to handle any type of spill that'll happen in here. So from a regulatory standpoint, really, we were hurting ourselves in being able to manage our site when we got rain. To address this we built a stainless steel with grating storage area, put in a high enough **curve curb** that we can have adequate secondary containment. We can put batteries on pallets in there and then we don't have to shut down the plant when we have the heavy rainstorm.

And this is, again, the Indianapolis site, just kind of showing you another picture of it. Okay, so again, straight out of the rules, straight out of your part B permit, here are some

of the requirements. You have got to make sure the storage area is compatible with the material that's being stored,. Well, that makes sense. You don't want to have corrosion, and you don't want to be leaking acid onto the ground. The storage area cannot be in a flood ~~plane~~ plain. So if you have a flood ~~plane~~ plain issue, you're going to have to raise your storage area so it's not in that flood ~~plane~~ plain. The storage area has to be free from cracks and gaps. It has to be able to contain leaks, spills, it has to be able to handle rain, and it has to be able to remove rain. That pipe is actually how we remove rain from our above ground storage area. When you get rain there, we go ahead and pump it out to the sump and then send it to the wastewater system. That is how that works. So you've got to be able to handle and have the ability to remove liquids. That's one way. You also can have sump ~~spilled~~ built right into the container storage area and have it flow down in that direction. Or you can just bring in a portable pump and pump it away. There are different ways to do it. The key is that you want to make sure that any containers, and any batteries, and any other type of waste that you have in that storage area is not going to be hurt by having standing in rainwater in the storage area for any length of time. And of course, then you have to perform inspections of that container storage area.

Truck management- there are times when the container storage area is filled and we have no room. Maybe it's a holiday and or there is unscheduled down time at the facility. If we really haven't received these batteries into our system, technically they're still in transit and we will store the trucks with the batteries still in them in the back area. This area is concrete. We will also perform inspections of those trucks frequently to make sure that there aren't any problems with leakage underneath the trucks from the spent batteries. Or they can be stored, again, in another place on the property as well.

Types of inspections. Well yes, we kind of went through all that with inspections of the material coming in, the inspections of the material in the storage area, and then inspections of the storage area. We also perform daily inspections of the container storage area just to make sure labels are getting on and staying on. Here is one of our compliance managers doing one of those inspections. At this facility we use a black tarp over the batteries and then put pallets over it to keep the weather out. This is a pretty wet and cold part of the country. What are you looking for in the inspection? Well, you are looking for the same thing over and over again. We are making sure the containers are in good condition and we are making sure that the containers are not directly on the ground. We are making sure that the containers have labels, and that the labels have the accumulation date on them because you have storage time per your permit. So you are looking for those things over and over again. You're looking to make sure the containers are in an upright condition, and that they're not unsafe so that somebody walking around cannot knock one of them over. You are making sure that you have adequate aisle space, and I will tell you it is the hardest thing to do. Number one, adequate aisle space is very difficult to define. Quite frankly, every inspector has a different approach, but it's very difficult, when you're taking batteries in and out of a storage area, to maintain adequate aisle space. I think that's probably one of our challenges, that is, getting folks to, realize that we've got to maintain adequate aisle space. That is an ongoing task and one of the reasons that you inspect all the time.



Constant training is required. Here is a list of some additional things that one should always look for in the container storage area. Is the area free from cracks? Is it free from standing water? Do we have debris around it that needs to be removed? Is the surface coating in good condition? Are there warning signs posted? Did someone come in the middle of the night and move it? Things like that. With your secondary containment system you're also looking for signs of wear and cracks. Do you have a crack in that curbing? With concrete, that's an issue. Have the winter months done some damage to your secondary containment integrity, and do you need to do some repair work? That's something you're always looking at. And is the containment system clean and clear? Here's the key. If you had a spill, can it hold the worst case spill?

And this is just a personal comment for me, because I used to be an auditor, we always do really well at documenting our mistakes. Document your fixes and document your corrective actions.

In summary, I think battery recycling is a success story. I think it's the right thing to do. I can't understand anybody disposing of a battery. I would have to say, personally, that the U.S. battery reclamation process is a very, very tightly controlled and highly regulated industry. In case anybody thought that environmental concern is something that is new, it isn't. We went back and found a comment that was made by JFK back in '63: "The supreme reality of our time is the vulnerability of our planet." This is not a new concept, it is one that's been around for a while. And, one last picture (on slide), again, personal touch. This is a deer at one of our secondary smelters. They're small in Indianapolis, what can I tell you? And that's it. Any questions?